



Date of Application, 22nd May, 1906—Accepted, 8th Nov., 1906

COMPLETE SPECIFICATION.

"Type and other Metal Casting Moulds"

We, PHILIP GEORGE NUERNBERGER and GEORGE RETTIG, Jr., Manufacturers, both of 32 South Jefferson Street, Chicago, County of Cook, State of Illinois, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in molds used in metal casting machines and more especially to molds used in casting printing type of that class wherein the juncture of the jet and the body portion of the type is formed at a point above the base of the type in such a manner that when the jet is broken the type is provided with finished base portions and an intermediate groove, and the invention has more particularly to do with a mold especially designed to effect the breaking of the jet.

The invention comprises primarily a casting mold provided with a movable gate having a jet forming aperture delivering to and adapted to project within the mold cavity together with devices for moving the gate to break off the jet before the mold is opened. The invention also includes the provision of yieldingly acting devices or springs which engage the movable gate and normally maintain the same in such position that the jet forming aperture is withdrawn from the mold cavity, the said springs permitting the said aperture to be forced into the cavity when the mold is thrust against the spout or other device for supplying molten metal.

According to our invention the said aperture which projects into the mold cavity is not equal to the depth of the type and is designed to form a groove in the type disposed between two finished base portions, and the mold is provided with engaging portions or shoulders adapted to form said base portions and to prevent withdrawal of the type from the mold when the jet is broken. A further improvement consists in providing the gate with a key forming cavity to provide a retaining tongue for the jet.

In the drawings, Figure 1 represents a front elevation of the closed mold.

Figure 2 is a similar view of the same partly open, the full open position being indicated by dotted lines.

Figure 3 shows the mold in rear elevation.

Figure 4 is a detail perspective view of a type-body and jet.

Figure 4^a is a detail perspective view of the type after the jet or sprue has been broken away.

Figure 5 is a detail view of the inside of the upper mold member partly broken away.

Figure 6 is a similar view of the lower mold-member.

Figure 7 represents a transverse section on line 7 of Figs. 1, 5 and 6, looking in the direction indicated by the arrow.

Figure 8 represents a transverse section on line 8 of Figs. 1, 5 and 6.

Figure 9 represents in perspective the jet-part of the lower mold-member and a plate on which the same is mounted.

Figure 10 represents a mold plate, detached, in perspective.

Figure 11 represents a rear side elevation of the lower mold-member, the jet-part thereof being removed.

Figure 12 represents in perspective the parts shown in Fig. 9, assembled; and

Figure 13 illustrates in detail the relative position of the nipple-plate, the nipple or spout and the jet-parts when the mold is ready for a charge of metal.

A and B designate respectively the stationary lower mold-member and the

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upper mold-member, which together form the cavity between them, said cavity in present instance being adapted to form a printers' type. The parts are in the main of usual form.

The gate consists of a lower section or member 14, and an upper member or section 16, correspondingly recessed in their inner faces to leave an inlet passage or recess 39 between them, in which the jet is formed, said passage communicating at its rear end with the mold cavity. The said gate-members or sections are not fixed to the respective mold-members, in which they fit, nor to the mold carriage, but are movable independently thereof outward and inward to a limited extent, the lower gate-member 14 being mounted on a movable plate 15 and the upper gate member 16 being similarly mounted on a correspondingly movable plate 17, and said gate-members being fastened to said plates respectively by screws 19 passing through screw-holes 18 in said plates. Thus the gate as a whole may move inward or outward independently of the body of the mold. Also the said gate is entirely separate from the spout or nipple, which is the metal supplying device for the mold, and is quite independent thereof in its operation, the only relation of said gate to said spout being as a recipient of the molten metal and means for directing the same into the mold cavity.

The said mold-members are provided respectively with outside mold plates 21 and 25, having screws 23 and 27 set in them, with protruding points entering slots 20 and 29 in the inner edges of the plates 15 and 17. These latter plates are fitted between the outside mold plates 21, 25, and the proximate parts of the two members or sections 22 and 26 which compose the mold carriage. The said screws and slots permit the limited outward and inward movement of the gate hereinbefore mentioned. The construction and arrangement of the corresponding elements in the upper and lower parts of the device is substantially identical. Behind each plate 15 and 17 in their normal position is a space 30 allowing for inward movement.

The mold-carriage-members 22 and 26 are recessed to receive a number of springs 31, which bear outward (as shown in Fig. 8) against the gate-members 14 and 16, holding them normally in their outermost position, leaving behind each of them a space 32, between it and the proximate part of the carriage. The width of spaces 30 and 32 is equal to the maximum amount of forward or outward extension of the gate, so that when the two members of the latter and their plates 15 and 17 are forced back against the resistance of said springs to their innermost position their rear faces will be in contact with the plates 33 and 35 described below.

The inner ends of those parts of the gate-members, which immediately surround the jet-forming passage are provided with lips or flanges which form a tapering tubular projection or nose 37, extending inwardly into a recess or passage 38 at the receiving end of the mold cavity beyond the surface of the foot of the type. The base of this projection of course is the terminal inner part of the jet-forming passage or recess, and its inner end constitutes a discharge aperture for the molten metal flowing into the mold.

Plates 33 and 35 are secured to and cover those portions of the two carriage-members which are opposed to the rear faces of the two gate-members. One of these plates (33) is shown in detail in Fig. 10, the construction of the two being identical. The holes C are for the springs 31 to work through. The lower edge of the plate is cut out at *a* to provide for the insertion and movement of the said sliding plate 15. The fastening screws are countersunk in holes 34 of said plate, that there may be no impediment to the contact of the latter with the gate at all points when the latter is moved inward.

The inner edges 36 of these plates 33 and 35 extend beyond the carriage-members into the receiving end of the mold cavity and toward the inner tubular discharging projection 37 aforesaid of the gate. Said plates thus form an inward shoulder 36 on each carriage-member, and these shoulders fit against the said tapering projection 37 near its base when the gate is in its innermost position.

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The lower gate-member 14 is provided with a key cavity 40, communicates with the jet forming recess or passage 39, into which cavity some of the molten metal will flow to form a retaining tongue 41 on each jet. This locks the jet in place against the action of the reciprocating parts of the gate.

5 The spout or nozzle 42 which delivers the molten metal is attached to or provided with a nipple-plate 43 and preferably held stationary, the mold being carried up to it, though of course this arrangement might be reversed, moving the spout and holding the mold stationary, without changing the construction hereinbefore described or the general operation of the mold.

10 This operation is as follows: The gate being normally in its outward position, is forced inward into contact with the nipple-plate or other fixed attachment of the spout, while the latter supplies molten metal to the inner jet-forming recess or passage 39 whence the metal flows into the mold cavity, filling the same and at last returning against the shoulders 36 surrounding the discharge projection 37. As the metal cools, a recess or groove *b* is formed by the said projection in the base of the type, and the line of junction of the jet with said type is necessarily at the inner end of this recess, considerably above said base and within the same. Consequently the jet may be broken off from the type without leaving any visible or tangible roughness, for the base itself, being formed against the shoulders 36 will be perfectly smooth. This breaking is effected by the straight thrust of the springs 31, as the mold is drawn away from the spout. They act promptly on relief from pressure, breaking off the jets at the right point, neatly and effectively, the shoulders 36 meanwhile anchoring the type.

20 It is obvious that various mechanical means other than those shown may be employed to actuate the movable gate. We do not limit ourselves to the precise devices shown, but may make such changes as practical working shall require from time to time without departing from the spirit and scope of our invention.

25 We are aware that it is not broadly new to construct a metal casting mold with a gate having a jet forming aperture delivering to and adapted to project within the mold cavity.

30 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A type and other metal casting mold comprising separable mold members and provided with a movable gate having a jet forming aperture delivering to and adapted to project within the mold cavity, and devices for moving the gate to break off the jet before the mold is opened.

2. A type and other metal casting mold as set forth in Claim 1, wherein yieldingly acting devices are provided for normally maintaining the gate in a position to withdraw the jet forming aperture outside the mold cavity and wherein contact with the metal supplying device serves to thrust the jet forming aperture into said cavity.

3. A type and other metal casting mold as set forth in Claims 1 and 2, wherein the molding cavity is provided with base forming portions on opposite sides of the jet forming aperture to prevent withdrawal of the type when the jet is broken.

4. A type and other metal casting mold as set forth wherein the gate is provided with a key forming cavity to provide a retaining tongue on the jet.

Dated this 22nd day of May, 1906.

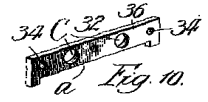
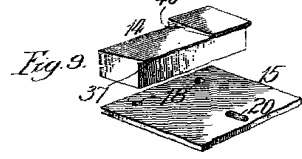
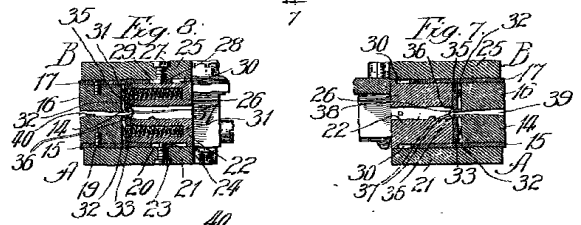
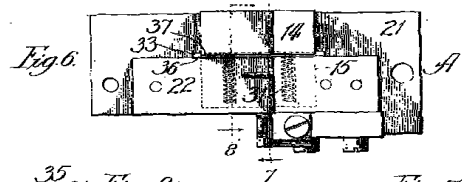
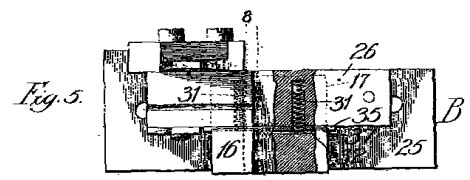
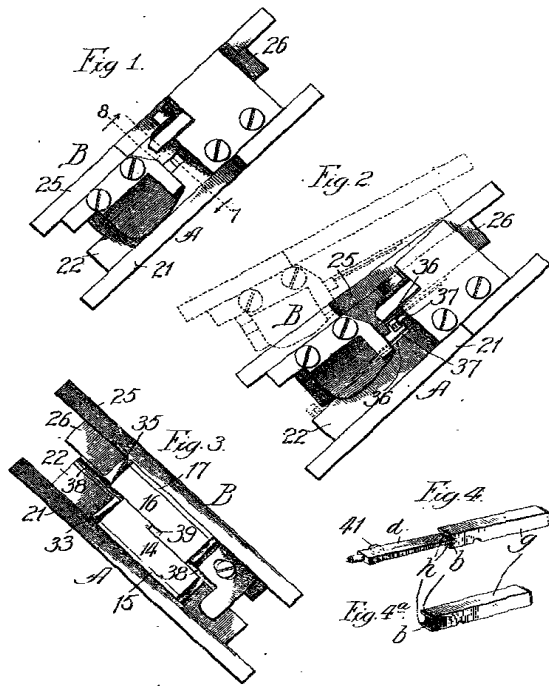
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Chartered Patent Agents,

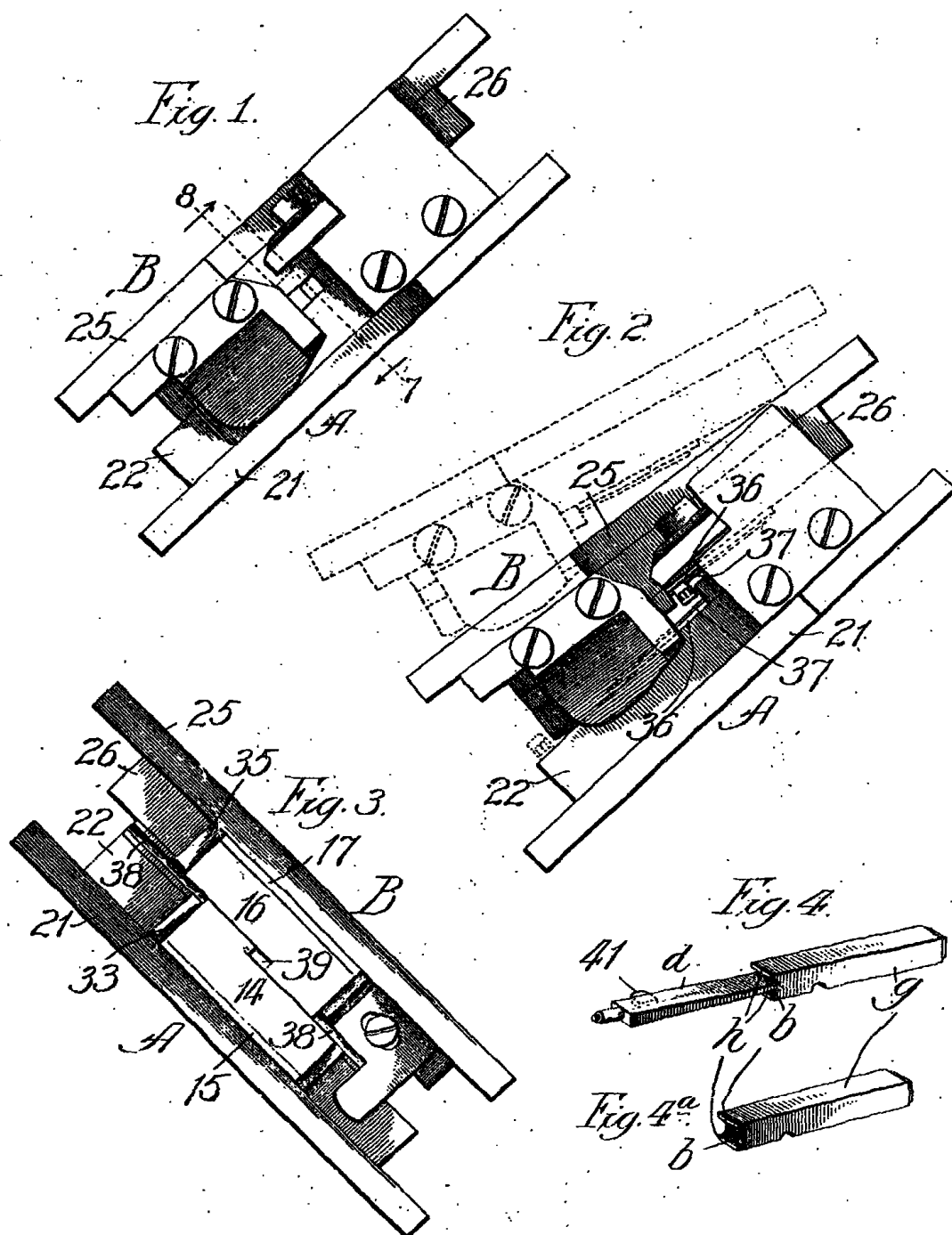
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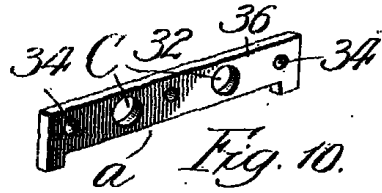
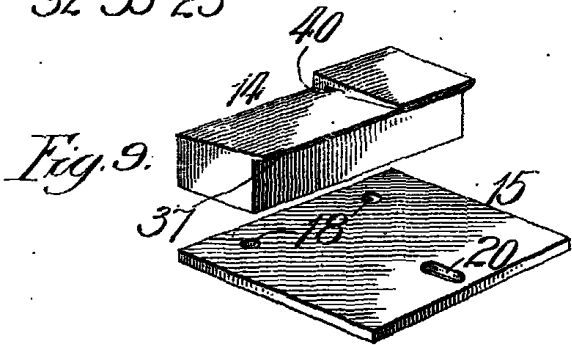
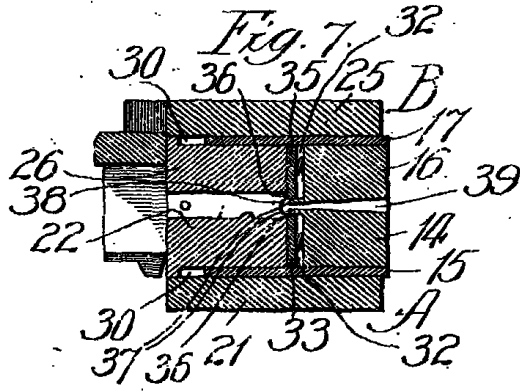
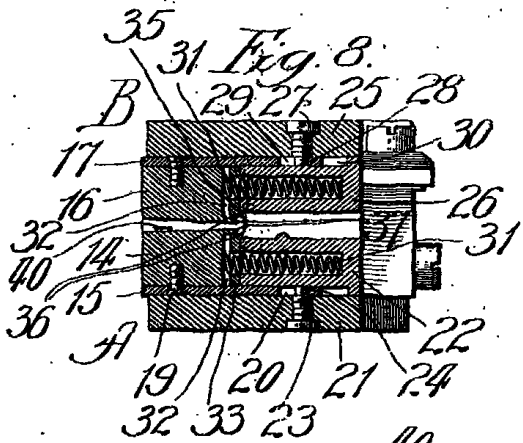
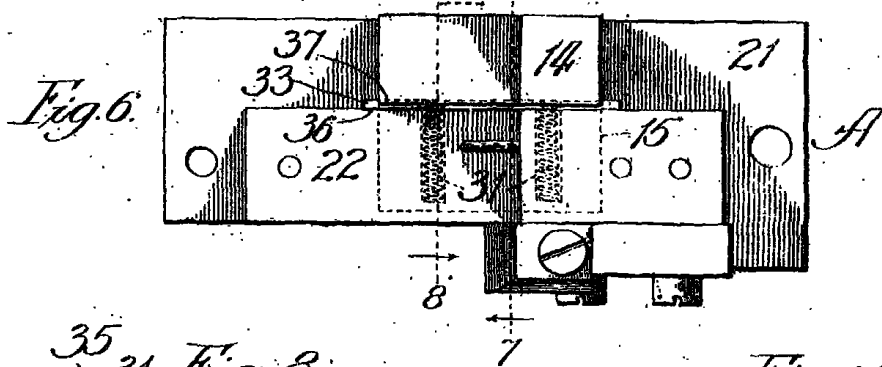
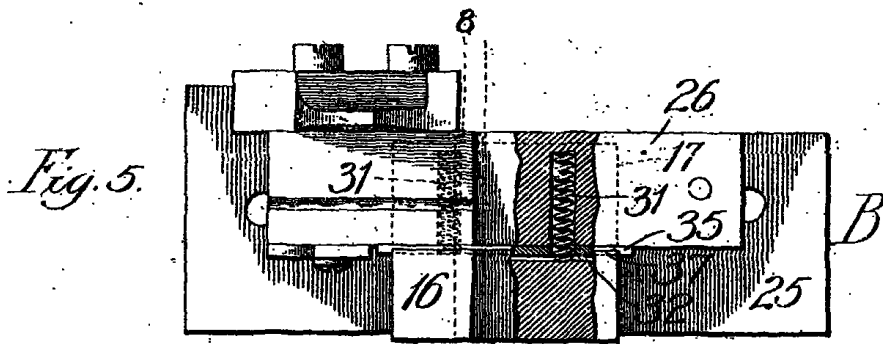
62 Saint Vincent Street, Glasgow.

Agents for the Applicant.



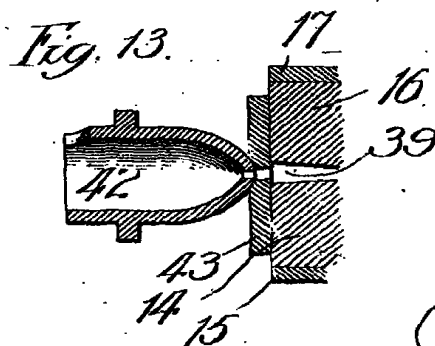
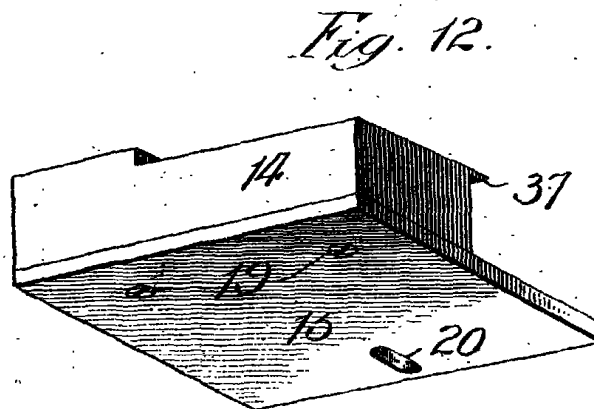
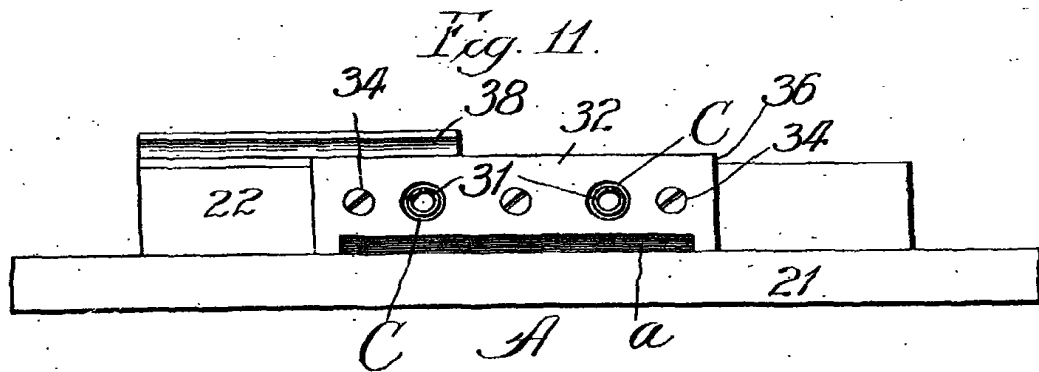
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